W. SHERWOOD.

WATER INLET VALVE FOR TANKS.

APPLICATION FILED OCT. 30, 1920.

1,389,907. Patented Sept. 6, 1921.

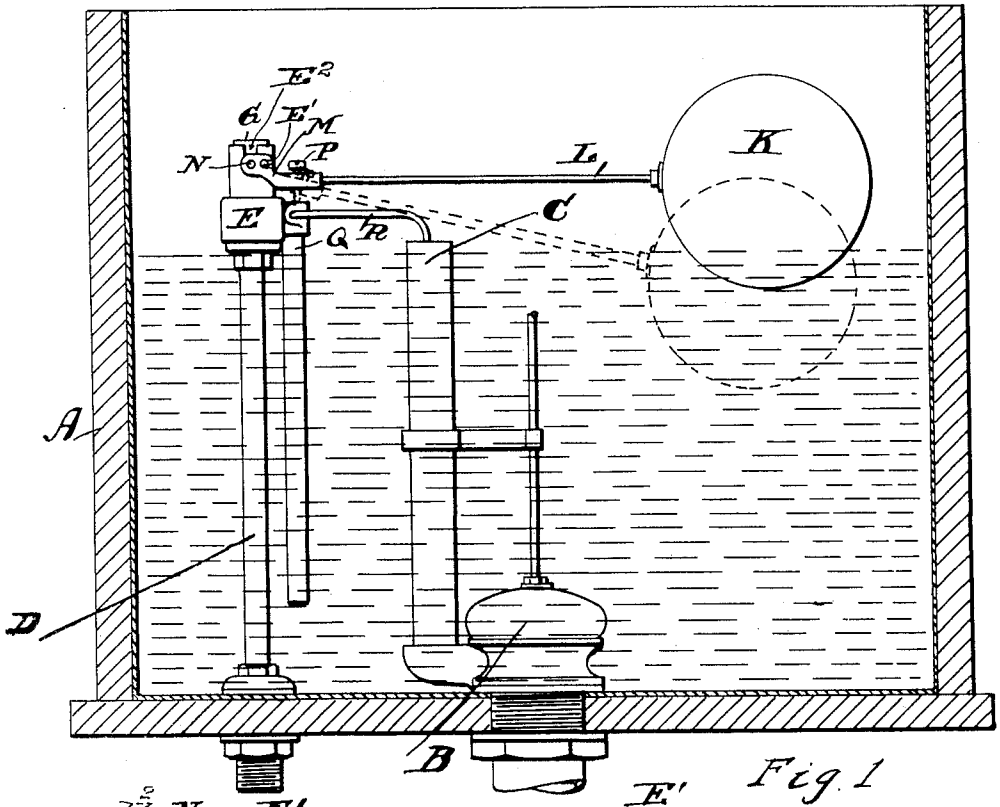

Fig. 1

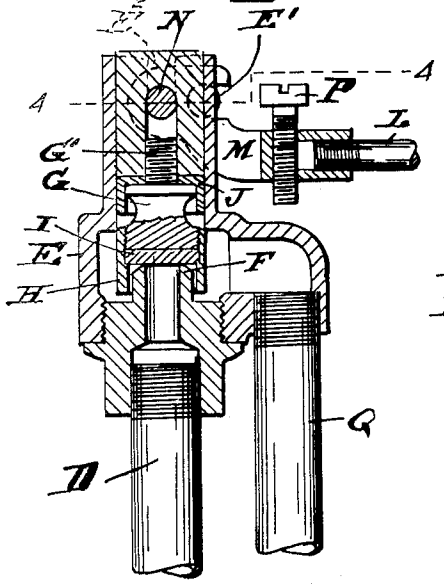

Fig. 2

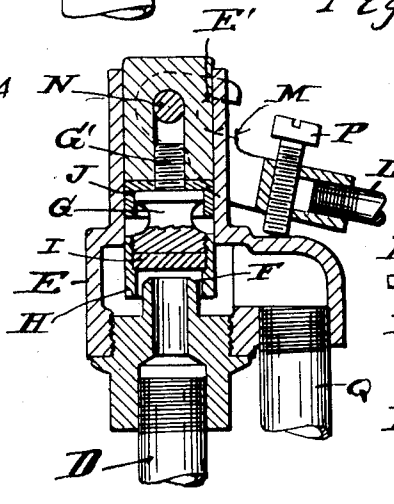

Fig. 3

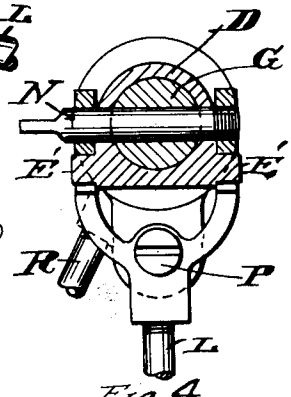

Fig. 4

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WATER-INLET VALVE FOR TANKS.

1,389,907. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed October 30, 1920. Serial No. 420,766.

To all whom it may concern:

Be it known that I, WILLIAM SHERWOOD, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Water-Inlet Valves for Tanks, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in water-inlet valves for tanks, shown in the accompanying drawings and more particularly described in the following specification and claim.

One object of my invention is to provide a simple, inexpensive device, adapted for controlling the delivery of water under various pressures.

A further object of the invention is to insure a positive cut-off, and one which is noiseless in action when refilling the tank.

A further object of the invention is to provide a device adapted to be located above the maximum water level in the tank that it may be readily accessible for examination or repairs.

A still further object of the invention is to secure the maximum leverage of the float lever for closing the valve against the incoming water pressure.

With the foregoing and other objects in view which will appear as the description proceeds the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings forming part of this specification:

Figure 1 is a longitudinal vertical sectional view through a flushing tank showing the inlet valve and controlling mechanism in elevation as they appear when the water has reached its maximum altitude, and in dotted lines the position of the float when the water is discharged from the tank.

Fig. 2 is a vertical cross sectional view of the inlet valve in the position occupied when "closed."

Fig. 3 is a similar view of the valve "open" to admit water into the tank.

Fig. 4 is a horizontal cross sectional view taken on or about line 4—4 of Fig. 2.

Referring now to the letters of reference placed upon the drawings:

A, indicates a flushing tank.

B is a discharge valve of ordinary construction its operating mechanism being eliminated as the latter forms no part of this invention.

C, indicates the usual overflow pipe. D, denotes a pipe extending upwardly from the bottom of the tank, on which is mounted a water-inlet valve chamber E.

F, denotes the valve seat, which in the present embodiment is an integral part of a fitting screwed into the valve chamber E, and upon the upper end of the inlet pipe D.

G, indicates a divided reciprocating valve plunger, to the lower end of which is screwed a ring H, counterbored to support a valve disk, or washer I.

J, is a leather cup interposed between the upper and lower portion of the plunger;— the divided plunger being connected together as a single unit by a screw stem G′, which projects upwardly from the lower portion of the plunger through the leather cup, into the upper portion of the plunger.

K, is a ball-float mounted on a rod L, in turn supported by a hook-shaped bifurcated fitting M, oscillating upon trunnions E′, integral with the valve body or chamber.

N, denotes a transverse pin connecting the valve plunger G with the fitting M, and extending through a slot E^2 in the valve body adjacent to the trunnions. The maximum leverage of the ball-float is thus attained for raising and lowering the valve upon the water in the tank reaching certain predetermined levels.

P, indicates an adjustable screw extending through the fitting M,—its lower end adapted to bear against the wall of the valve

chamber to limit the rocking movement of the fitting.

Q, denotes a water discharge pipe leading downwardly from an opening in the valve chamber.

R, is a pipe leading from the valve body to the overflow pipe for supplying the "after-fill."

Having thus indicated the several parts by reference letters the construction and operation of the device will be readily understood.

When the water has been discharged from the tank by lifting the valve B from its seat in the usual manner, the float K will be in the position indicated by the dotted lines in Fig. 1 and the inlet valve in the position shown in Fig. 3, permitting the water to pass through the pipe D out through the pipe Q,—into the tank. It will be noted that the water upon passing up through the fitting will flow over the valve seat F, and thence downwardly through the annular channel between the ring H and the annular projection on which is formed the valve seat and out through the pipe Q into the tank.

It will be noted that the peculiar construction and arrangement of the valve seat in connection with the surrounding annular ring H, serves to effect a "quiet" discharge of the water into the tank. Upon the water in the tank reaching a sufficient altitude to raise the float P to the position indicated in Figs. 1 and 2 the valve will be forced to its seat against the pressure of the incoming water.

It will also be noted that the degree to which the valve may be opened is regulated within certain limits by the screw P. Water to supply the usual "after-fill' is discharged from the valve chamber through the pipe R into the overflow pipe and thence to the bowl.

It will also be noted that by locating the trunnions E',—upon which the float lever L oscillates,—adjacent to the transverse pin N connecting the valve plunger with the float valve, that the maximum leverage of the float lever may be obtained to insure the proper seating of the valve against high water pressure, and thus a complicated series of compound levers (frequently employed in installations where relatively great leverage is required to seat the valve) is eliminated.

Having thus described my invention what I claim is:

1. In a device of the character described, a water inlet pipe for a flushing tank, a valve chamber located on the end of said pipe having a discharge opening into the flushing tank, a plunger valve fitted in the valve chamber adapted to seat against the flow of water into the latter, and a float lever fulcrumed on trunnions integral with the valve chamber, a transverse pin connecting the valve plunger with the float lever adjacent to the fulcrum of said float lever, whereby the maximum leverage of the float lever may be obtained.

2. In a device of the character described, a water inlet pipe for a flushing tank, a valve chamber located on the end of the inlet pipe having a discharge opening leading to the flushing tank, a plunger valve fitted in the valve chamber adapted to seat against the discharge opening into the valve chamber, a float lever fulcrumed on trunnions cast integral with the body of the valve chamber, a transverse pin extending through the valve plunger and through the float lever, adjacent to the trunnions, whereby the maximum leverage of the float lever may be obtained, and means for regulating the descent of the float lever.

3. In a device of the character described, a water inlet pipe for a flushing tank, a valve chamber located on the end of said pipe having a discharge opening into the flushing tank and a valve seat in line with inflow end of the pipe into the chamber, a plunger valve having a collar, adapted to encircle said valve seat when raised, whereby the water will be directed downwardly between the valve seat and collar in its passage through the valve chamber, a float lever, a bifurcated fitting secured to the lever fulcrumed on trunnions cast integral with the valve chamber, and a transverse pin connecting the bifurcated fitting with the valve plunger.

4. In a device of the character described, a water inlet pipe for a flushing tank, a valve chamber fitted to the end of said pipe having a discharge pipe leading from said valve chamber into the flushing tank, a divided plunger valve fitted in the valve chamber adapted to seat against the flow of water into the latter, a cup washer located between the divided portions of the plunger, a valve disk, a collar screwed to the lower end of said plunger adapted to support the valve disk and to loosely encircle the valve seat when raised, a float lever, a bifurcated fitting secured to the end of the lever fulcrumed on trunnions integral with the valve chamber, and a transverse pin connecting the bifurcated fitting with the plunger valve.

5. In a device of the character described, a water inlet pipe for a flushing tank, a valve chamber fitted to the end of said pipe having a discharge pipe leading from said valve chamber into the flushing tank, a divided plunger valve fitted to the valve chamber, adapted to seat against the flow of water into the latter, a cup-washer located between the divided portions of the plunger, a valve disk, a collar screwed to the lower end of said plunger adapted to support the valve

disk and to loosely encircle the valve seat, a float lever, a hook-shaped bifurcated fitting secured to the end of the float lever fulcrumed on trunnions integral with the valve chamber, a transverse pin connecting the bifurcated fitting with the plunger valve, an adjustable screw supported in the end of said bifurcated fitting to limit the tilting action of the float lever, and an after-fill pipe leading from the valve chamber and adapted to discharge into an overflow pipe.

In testimony whereof, I sign this specification in the presence of two witnesses.

WILLIAM SHERWOOD.

Witnesses:
L. E. THOMAS,
JOHN CONSIDINE, Jr.